

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

Please enter the following amended claims.

Claims 1-28. ~~E~~ (Withdrawn)

Sub E3 Claim 29. (Currently Amended) An isolated and purified DNA molecule comprising a DNA segment comprising a transcriptional regulatory region of a plant 4-coumarate Co-enzyme A ligase gene, wherein the transcriptional regulatory region comprises SEQ ID NO:5 at least ~~SEQ ID NO:15~~.

Claim 30. (Original) The isolated and purified DNA molecule of claim 29 in which the DNA segment is from aspen. ~~E~~

Claim 31. (Previously Amended) The isolated and purified DNA molecule of claim 29 in which the DNA segment directs expression of a linked sequence in the xylem of a plant.

Claims 32-44. (Withdrawn)

Sub E4 Claim 45. (Currently Amended) An expression cassette comprising a transcriptional regulatory region of a ~~lignin-specific~~ 4-coumarate Co-enzyme A ligase gene operably linked to a DNA segment comprising an open reading frame; wherein the transcriptional regulatory region comprises SEQ ID NO:5.

Claim 46. (Currently Amended) A method of expressing a DNA segment in the xylem of a plant, comprising:

(a) introducing an expression cassette comprising a transcriptional regulatory region of a ~~lignin-specific~~ 4-coumarate Co-enzyme A ligase gene operably linked to a DNA

segment into cells of a plant; wherein the transcriptional regulatory region comprises SEQ ID NO:5;

- (b) regenerating the plant cells to provide a transgenic plant; and
- (c) expressing the DNA segment in the xylem of a plant.

Claims 47-53. (Withdrawn)

Claim 54 (Previously Amended) The isolated and purified DNA molecule of claim 31, wherein the linked sequence is the plant 4-coumarate Co-enzyme A ligase gene or another gene.

Claim 55. (Currently Amended) The isolated and purified DNA molecule of claim 29, wherein ~~the transcriptional regulatory region is a sequence as shown in~~ SEQ ID NO: 5 comprises SEQ ID NO:15, SEQ ID NO:16, and SEQ ID NO:17.

Claim 56-57. (Cancelled)

Claim 58. (Previously Added) The isolated and purified DNA molecule of claim 31, wherein the DNA segment is expressed in the plant xylem for engineering agronomically desirable traits selected from the group consisting of altered lignin content, increased or decreased coniferyl and sinapyl alcohol units in the lignin structure, altered cellulose content, altered growth, or altered cellulose content and combinations thereof.

Claim 59. (Cancelled)

Claim 60. (Previously Amended) An expression cassette as set forth in claim 45, wherein the open reading frame comprises the 4-coumarate Co-enzyme A ligase gene or another gene.

Claim 61. (Cancelled)

Claim 62. (Currently Amended) An expression cassette as set forth in claim 45, wherein the transcriptional regulatory region directs the expression of a gene in the a xylem of a plant.

Claim 63. (Currently Amended) An expression cassette as set forth in claim 45, wherein ~~the transcriptional regulatory region is a sequence as shown in~~ SEQ ID NO: 5 comprises SEQ ID NO:15, SEQ ID NO:16, and SEQ ID NO:17.

Claim 64. (Cancelled)

Claim 65. (Previously Amended) An expression cassette as set forth in claim 45, wherein the transcriptional regulatory region comprises a sequence as shown in SEQ ID NO: 15.

Claim 66. (Currently amended) An expression cassette as set forth in claim 62, wherein the xylem-specific ~~plant~~ gene expression ~~is~~ allows for the engineering of agronomically desirable plant traits selected from the group consisting of altered lignin content, increased or decreased coniferyl and sinapyl alcohol units in the lignin structure, altered cellulose content, altered growth, or altered cellulose content and combinations thereof.

Claims 67-70. (Cancelled)

sub E6
Claim 71. (Previously Added) A polynucleotide comprising a sequence as shown in SEQ ID NO: 5, wherein ~~SEQ ID NO: 5~~ is characterized by having promoter activity.

Claim 72. (Previously Added) A polynucleotide sequence as set forth in claim 71, wherein the promoter activity is xylem-specific.

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Claim 73. (Currently Amended) A polynucleotide sequence as set forth in claim 71, wherein the promoter activity is used to express genes in the xylem of the stem, root, or midrib of leaves ~~lignin-specific.~~

Claim 74. (Cancelled)

Claim 75. (Previously Amended) A polynucleotide sequence as set forth in claim 71, wherein SEQ ID NO: 5 comprises a cis-acting element; wherein the cis-acting element comprises SEQ ID NOs: 15-17.

Claim 76. (Previously Amended) A gene promoter, comprising:
a polynucleotide sequence as shown in SEQ ID NO: 5 such that when the gene promoter is operably linked with an open reading frame and is integrated into a plant genomic DNA, the gene promoter targets the expression of the open reading frame in the xylem.

Claim 77. (Cancelled)

Claim 78. (Currently Amended) A polynucleotide comprising:

- a) a sequence as shown in SEQ ID NO: 5, wherein SEQ ID NO: 5 comprises SEQ ID NO:15, SEQ ID NO:16, and SEQ ID NO:17;
- b) a sequence as shown in SEQ ID NO: 15, SEQ ID NO:16, and SEQ ID NO:17;
- c) a sequence as shown in SEQ ID NO: 15;
- d) a sequence as shown in SEQ ID NO: 15, and SEQ ID NO:16;
- e) a sequence as shown in SEQ ID NO: 15, and SEQ ID NO:17;
- f) a sequence as shown in SEQ ID NO:16, and SEQ ID NO:17; or
- g) a plant sequence as shown in SEQ ID NO:17.

Claim 79-92. (Cancelled)

Claim 93. (Previously Added) The isolated and purified DNA molecule of claim 29 wherein the transcriptional regulatory region is tissue-specific.

Claim 94. (New) A plant transformed by the method of claim 46.

Claim 95. (New) A method of transforming a plant by incorporating a polynucleotide sequence into the genome of the plant wherein the sequence is SEQ ID NO:5 and wherein SEQ ID NO:5 acts as a promoter to direct the expression of a gene in the xylem of the plant.

Claim 96. (New) A plant transformed by the method of claim 95.

Claim 97. (New) The promoter of claim 76 wherein the polynucleotide sequence comprises SEQ ID NO: 15.

Claim 98. (New) The promoter of claim 76 wherein the polynucleotide sequence comprises SEQ ID NO: 16.

Claim 99. (New) The promoter of claim 76 wherein the polynucleotide sequence comprises SEQ ID NO: 17.

Claim 100. (New) The method of claim 95, wherein the xylem-specific gene expression allows for the engineering of agronomically desirable plant traits selected from the group consisting of altered lignin content, increased or decreased coniferyl and sinapyl alcohol units in the lignin structure, altered cellulose content, altered growth, or altered cellulose content and combinations thereof.

Sub E8
Claim 101. (New) The method of claim 46, wherein the xylem-specific gene expression allows for the engineering of agronomically desirable plant traits selected from the group consisting of altered lignin content, increased or decreased coniferyl and sinapyl alcohol units in the lignin structure, altered cellulose content, altered growth, or altered cellulose content and combinations thereof.